

### AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method for measurement of high temperatures of a process stream, the method comprising the steps of:

providing a thermocouple arranged in a thermowell, wherein a layer of catalytic material is formed on and at least partly covers the thermowell; ~~is at least partly covered by a layer of a catalytic material~~

inserting the thermowell into a reactor wall, which is part of a reactor, so that a tip of the thermowell does not penetrate an inner chamber of the reactor;

conducting in a process stream at least one endothermic catalyzing steam reforming reaction, wherein the layer of catalytic material is ~~being~~ active in the at least one endothermic catalyzing steam reforming reaction; and

contacting the thermowell with ~~[[a]]~~ the process stream during the endothermic catalyzing steam reforming reaction, to carry out the temperature measurement.

2. (Currently amended) The method according to claim 1, wherein ~~[[a]]~~ the tip of the thermowell is covered by the catalytic material with a layer thickness of 0.2-5 mm.

3. (Currently amended) The method according to claim 1, wherein the thermowell is installed in ~~[[a]]~~ the reactor wall by inserting the thermowell through a hole penetrating the reactor wall so that the tip of the thermowell is in contact with the process stream.

4. (Currently amended) A method for measurement of high temperatures of a process stream, the method comprising the steps of:

providing a thermocouple arranged in a thermowell, wherein the thermowell is at least partly covered by a layer of a catalytic material-being active in at least one endothermic catalyzing steam reforming reaction; and

contacting the thermowell with a process stream during the endothermic catalyzing steam reforming reaction, to carry out the temperature measurement,

wherein the thermowell is installed in a reactor wall by inserting the thermowell through a hole penetrating the reactor wall so that the tip of the thermowell is in contact with the process stream and ~~The method according to claim 3,~~  
~~wherein the tip of the thermowell is 20-50 mm behind an inner surface of the reactor wall.~~

5. (Currently amended) The method according to claim 1, wherein the process stream further undergoes the steam reforming reaction in a catalytic bed.

6. (Currently amended) A method for measurement of high temperatures of a process stream, the method comprising the steps of:

providing a thermocouple arranged in a thermowell, wherein the thermowell is at least partly covered by a layer of a catalytic material-being active in at least one endothermic catalyzing steam reforming reaction; and

contacting the thermowell with a process stream during the endothermic catalyzing steam reforming reaction, to carry out the temperature measurement,

wherein the process stream undergoes the steam reforming reaction in a catalytic bed and ~~The method according to claim 5,~~ wherein the temperature is measured upstream of the catalyst bed.

7. (Previously presented) The method according to claim 5, wherein the steam reforming reaction is carried out in an autothermal reformer.

8. (Canceled)

9. (Previously presented) The method according to claim 1, wherein the measured process stream has a temperature of 1000-1500° C.

10. (Currently amended) A temperature measurement instrument comprising a thermocouple inserted in a thermowell, wherein a layer of catalytic material is formed on and at least partly covers the thermowell, and wherein the layer of catalytic material is at least partly covered by a layer of a catalytic material being active in at least one endothermic catalyzing steam reforming reaction, and wherein the thermowell is inserted into a reactor wall, which is part of a reactor, so that a tip of the thermowell does not penetrate an inner chamber of the reactor.

11. (Previously presented) The method according to claim 2, wherein the layer thickness is 0.5-2 mm.

12. (Currently amended) A method for measurement of high temperatures of a process stream, the method comprising the steps of:

providing a thermocouple arranged in a thermowell, wherein a layer of catalytic material is formed on and at least partly covers the thermowell; is at least partly covered by a layer of a catalytic material

inserting the thermowell into a reactor wall, which is part of a reactor, so that a tip of the thermowell does not penetrate an inner chamber of the reactor;

conducting in a process stream at least one endothermic catalyzing steam reforming reaction, wherein the layer of catalytic material is being active in the at least

one endothermic catalyzing steam reforming reaction;

cooling the thermowell by contacting the thermowell with [[a]] the process stream during the endothermic catalyzing steam reforming reaction; and  
carrying out temperature measurements.